HUITT-ZOLLARS

HUITT-ZOLLARS, INC. • 814 E. Pike Street • Seattle, WA 98122-3893 • 206.324.5500 phone • 206.328.1880 fax • huitt-zollars.com

March 22, 2006

City of Lake Forest Park
City Council
17425 Ballinger Way NE
Lake Forest Park, WA 98155

Ref: Burke Gilman Trail Standards Review

Dear Council Members:

The Huitt-Zollars Seattle staff has worked extensively with the Lake Forest Park City Council Committee on the Burke Gilman Trail to prepare a response to King County trail redevelopment proposals.

As work progressed with the subcommittee, it was agreed that it would be beneficial to use a portion of the study budget to prepare a set of possible conditions that the City of Lake Forest Park could use in evaluating and permitting the Burke Gilman Trail. Accordingly, work on standards review was reduced to a summary level and the budget saved was used for the preparation of a document setting forth the basis for a City conditional use permit ordinance. The report prepared by Huitt-Zollars is in two parts:

Section 1. Standards Review Summary provides Huitt-Zollars deliverable under our agreement with the City.
Section 2. Suggested Conditions for Conditional Use Permit provides a basis for a City of Lake Forest Park Conditional Use Permit ordinance as requested by the subcommittee.

We look forward to incorporating City comment and completing the enclosed documents as well as meetings with King County and the Federal Highway Administration to discuss the report. Should you have any questions please contact me or Don at (206) 324 -5500.

Sincerely,

HUITT-ZOLLARS, INC.

Don Helling, PE

Carl Stixrood, AICP

Section 1
Standards Review Summary

Standards and Guidelines for Design and Safety of Shared Use Paths in Urban Areas

Huitt-Zollars, on behalf of the City of Lake Forest Park, has reviewed King County studies/reports pertaining the redevelopment of the Burke Gilman Shared Use Path through Lake Forest Park along with the standards/guidelines that are cited and relied upon in those reports.

Standards were reviewed for their applicability to design recommendations in King County reports and to shared use paths in urban areas.

A summary of the review of documents listed in Appendix A is provided below organized under the major scope items in the City's scope of work:

1. **The use of standards for shared use paths in an urban area.**

   Federal, state, and local agencies' design guidelines for bike trails are typically based on the 1999 American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities.* The *Guide* is currently under consideration for revision by AASHTO[1]. Revised standards will likely recognize that bicyclists may not continue to be the critical users for shared use paths.

   In March 2005, the National Cooperative Highway Research Program (NCHRP) prepared a report titled *Updating the AASHTO Guide for the Development of Bicycle Facilities.* Research for this report included a survey of nearly 500 users of the existing AASHTO Bike Guide and literature review. Page 11 of the report states, "The provisions of the new *Guide* should also account for the fact that bicycle facilities will be shared by other users such as pedestrians, joggers, and inline skaters. This reality has significant bearing on how facilities are to be designed; recent FHWA research has revealed that in virtually all design components of both on- and off-road facilities, bicyclist would not be the "critical user," and therefore not the "design user"".

   Current guidelines for the design of shared use paths are primarily based on the needs of bicyclists. Evidence of this trend is exhibited in the WSDOT *Design Manual* definition of Shared Use Paths as being "built primarily for use by bicycles but is also used by pedestrians, joggers, skaters, wheelchair users (both nonmotorized and motorized), and others." While this definition promotes safety for bicycle users (the fastest path users), it may not provide adequate safety measures for the increasingly congested conditions of shared use paths by a variety of users.

[1] The National Cooperative Highway Research Program (NCHRP) Research Problem Statement, Problem Number 2007-G-25, titled Revision of the AASHTO Guide for the Development of Bicycle Facilities submitted jointly by the AASHTO Technical Committees on Non Motorized Transportation and Geometric Design to the AASHTO Standing Committee on Research for possible funding, September 2005.

Safety between the different types of path users is an emerging concern that may not be adequately addressed in the current guidelines.

Reed Albergotti, in the article *Building a Better Bike Path* (Wall Street Journal, October 15, 2005) states that a variety of other groups besides bicyclists are increasingly using the paths and that current guidelines are considered outdated for bike-path designers. AASHTO is proposing to revise its 1999 guidelines, *Guide for the Development of Bicycle Facilities,* in order to address these concerns.

A research proposal has been submitted to AASHTO to update the 1999 edition of the *Guide for the Development of Bicycle Facilities.* The proposal's problem statement states, "Overall, an updated and revised Guide will offer more utility to all users because it will be more comprehensive." The updated *Guide* intends to add new technical material and include nine (9) areas for future research. The updated proposal will be considered by AASHTO in March 2006 for possible funding.

While the 1999 AASHTO *Guide for the Development of Bicycle Facilities* was relied upon for the King County reports, changes to this guide are forthcoming.

2. **Applicability of the standards used by King County consultants to the section of trail that traverses Lake Forest Park.**

Special conditions in Lake Forest Park that may require additional consideration in design include: existing conditions related to proximity of residential uses, topography (steep vertical and acute angular vehicle approaches to the path), multiple and frequent driveway/roadway crossings.

The existing conditions of the shared use path through Lake Forest Park are unique from the other sections of the Burke-Gilman Shared Use Path. Original Forward Thrust legislation (KC Resolution 34571, 1968) listed the Burke Gilman trail as a "Walking Path and Trail" facility. The 1975 Burke-Gilman Trail Supplement to the Final Environmental Impact Statement describes project design measures including traffic calming "jogs" at intersections to address the limited sight lines at the high number of intersections in Lake Forest Park. Over time, use of the facility as a commuter route and regional bicycle route has grown along with local use for walking. The AASHTO *Guide* states that shared use paths "...can serve as direct commute routes if cross flow by motor vehicles and pedestrians is minimized." The *Idaho Bicycle and Pedestrian Transportation Plan* recommends against a multi-use path when there are more than eight (8) crossings per mile. The *Plan* suggests substitution of an on-street bicycle lane under these conditions and the use of extreme caution. High speed recreational bicyclists may wish to use Lake City Way as an alternate route; however, this route would have more traffic and hills and would be a longer route.

The section of the Burke-Gilman Shared Use Path through Lake Forest Park has eleven (11) vehicle crossing locations over the two (2) mile section of path. From Figure 1 of the Transpo Group Report, it appears that the south section of the path has eight (8) vehicle crossings per mile. The north section of the path appears to have three (3) vehicle crossings per mile. Since cross flow by motor vehicle traffic cannot be minimized along this section of path due to existing

conditions and adjacent residential access needs, the applicability of standards for shared use paths along this section of path should require additional consideration.

3. **Availability of options for increasing safety related to the variety of uses along this trail.**

As stated under item 1, the use of standards for shared use paths in an urban area, an update to the AASHTO *Guide* is proposed and to be considered for funding in March 2006. The update to the *Guide* proposes to include revised standards and guidelines to address the increase in the variety of users along shared use paths.

Current guidelines for the shared use paths emphasize that paths should be designed with the bicyclists' safety in mind while recognizing other users along the trail. It should be recognized that this guideline might be changing in the updated AASHTO *Guide*.

4. **Use of speed limits for safety and design considerations.**

Design Speed. The AASHTO *Guide* recommends a minimum design speed of 20 MPH for shared use paths. However, due to the number of driveway and minor road crossings, the section of path through Lake Forest Park does not conform to the ideal design standards of a shared use path serving as a bicycle commuter route. Existing conditions are unique from standard shared use paths and a lower design speed should be considered.

Current practice is to establish a design speed based on the fastest user. As noted above, this practice may be coming into question for shared use paths.

A lower design speed would also help maintain the character of the neighborhood along the Burke-Gilman Shared Use Path through Lake Forest Park by preserving the buffer between path and residential uses. For example, a reduction of design speed from [20 MPH to 18 MPH] would reduce the stopping sight distance[2] from [127 feet to 109 feet] (14.2% reduction) and a reduction of design speed from [20 MPH to 15 MPH] would reduce the stopping sight distance from [127 feet to 85 feet] (33.1% reduction).

Sight triangles may require significant grade changes and removal of landscaping and fences. Single-family residential neighborhoods border both sides of this section of path. Existing landscaping, fences, and grade changes provide a buffer between the active path use and the residential uses alongside the path.

Posted Speed. The Manual on Uniform Traffic Control Devices (MUTCD) Part 9 – Traffic Controls for Bicycle Facilities does not require a *posted* speed limit sign on bicycle facilities; however, speed limit signs and other regulatory signs in MUTCD Section 2B –Signs may be installed on bicycle facilities as appropriate.

MUTCD 2B.13 states that when a speed limit is posted, it should be within 5 MPH of the 85th-percentile speed of free-flowing traffic. According the Transpo Group Report, the 85th-percentile

[2] Stopping sight distance was calculated from the equation provided on page 42, Figure 19 of the *Guide for the Development of Bicycle Facilities*. The value of 0.25 was used as the coefficient of friction (as recommended in the *Guide*) to account for the poor wet weather braking characteristics of bicycles and a flat grade of approach was used.

bicycle speed is 17 MPH[3]. This section also states, "other factors that may be considered when establishing speed limits include: ...alignment, sight distance, and .....pedestrian activity."

Care should be taken when selecting a posted speed limit for the multiple users of the shared-used path. The concern with an overly restrictive speed limit or other traffic control sign is that it may not be respected and adhered to by bicyclists. Overly restrictive signs should be avoided to maintain the credibility of all signs along the path.

[3] Due to the limited traffic count data, it has not been established whether the 17 MPH reflects "free flowing traffic".

5. **Identification of speed control mechanisms for bicyclists.**

   The AASHTO *Guide for the Development of Bicycle Facilities* generally discourages the use of obstructions for speed control (page 67), however traffic control warning signing and pavement marking consistent with standards from MUTCD section 9 and section 2 (as appropriate) may be used to slow bicyclists.

   Other speed control measures that are not precluded by AASHTO guidelines include:

   - Visual clues of the unique conditions of the section of path ("path in a park") through Lake Forest Park and speeds may be adjusted accordingly
   - Signing requesting courteous behavior
   - Knowledge signs such as radar speed signs
   - Speed limit signs
   - Enforcement

6. **Identification of federal funding guidelines that would drive the design standards for a multi-use trail.**

   The Federal Highway Administration provides funding (CFR Title 23 Highways, Section 652.7) for bicycle projects that are "principally for transportation rather than recreational use." To receive funding, the project must be designed in substantial conformity with the latest official design criteria. These criteria are noted in section 652.13 as the AASHTO guide or "equivalent guides developed in cooperation with state or local officials and acceptable to the division office of the FHWA".

Section 2
Suggested Conditions for Conditional Use Permit Ordinance

The purpose of this section is to suggest possible conditions, based on current and emerging standards for the City to use in Conditional Use Permit review of Burke Gilman Trail redevelopment proposals. The City may wish to establish less or more stringent conditions in its Conditional Use Permit ordinance.

LAKE FOREST PARK SAFETY AND ENHANCEMENT ZONE

The City of Lake Forest Park has engaged Huitt-Zollars to review recent King County reports pertaining to the re-development of the Burke Gilman Shared Use Path through Lake Forest Park. The section of the Burke Gilman Shared Use Path that traverses Lake Forest Park is very different from other sections of the path because of a variety of unique characteristics and more intensive uses including:

- Single family residential neighborhoods border both sides of the path along much of the Lake Forest Park section
- Numerous existing driveways and residential streets cross the path
- Access to existing single family residences requires crossing the path
- This section of the path serves as the principle "sidewalk" for several neighborhoods and provides children access to school buses
- Access to community/civic clubs and public facilities requires crossing the path
- The Lake Forest Park section of the path is in close proximity to a major town center and provides an important link between the center and the community

Huitt-Zollars has reviewed topographic and geometric conditions, traffic safety guidelines and standards, traffic control mechanisms, and forecasted uses for the section of the Burke Gilman Shared Use Path through the City of Lake Forest Park.

It is recommended that the approval of a trail redevelopment proposal under a Conditional Use Permit include at a minimum the recommended development goals 1 through 5 as described in this memorandum:

1. GOAL: Provide a safe interface between path users and crossing traffic.
2. GOAL: Provide a screened interface with property adjacent to path.
3. GOAL: Provide a safe interface between different types of path users.

4. GOAL: Provide notification of different trail conditions and use regulations in Lake Forest Park.

5. GOAL: Establish responsibility for maintenance and enforcement.

CONDITIONAL USE PERMIT DEVELOPMENT GOALS 1 – 5:

Huitt-Zollars recommends that an environmental review be prepared for this project and that impacts and mitigation be fully considered in that review to provide information needed for an informed decision on the Conditional Use Permit.

1. GOAL: Provide a safe interface between path users and crossing traffic.

The safety of all of Lake Forest Park's citizens and visitors using surface streets and the trail is the paramount concern. The Lake Forest Park section of the Burke Gilman Shared Use Path is unique because of the large number of residential street and access crossings along this section of trail and the acute vertical and horizontal angles of approach that limit visibility. This is of particular concern for motor vehicle operators, especially trucks and delivery vehicles with limited visibility past 90 degrees on the passenger side

In a collision between a path user and a motor vehicle, the path user is more likely to experience serious injury or death than the driver of the vehicle. Path users should be warned of potential motor vehicle conflicts at crossings where such potential collisions could occur.

A safe interface between path users and crossing traffic may be achieved by implementing the following recommendations:

1.1. Crossing motor vehicle traffic should have the ability to cross path traffic through one or more of the following means, depending on intersection conditions:

i. Provide yield signs on path at driveway crossings.

By observation, many path users do not come to a full stop at the existing stop signs along the path in Lake Forest Park because the driveways and residential street intersections do not appear to have enough vehicular traffic to warrant a full stop. In lieu of stopping, "many bicyclists are observed to slow down in advance of these intersections" (Transpo Group Report, 5/16/05, page 9).

In Huitt-Zollars' opinion, observed behavior matches the level of traffic control intended by a yield sign[4]. Yield signs would maintain right-of-way for motor vehicle traffic while providing an appropriate level of traffic control based on the volume of through traffic versus crossing motor vehicle traffic at these intersections. Replacement of stop signs with yield signs at these low volume intersections in combination with the following traffic safety measures may eliminate the potential disregard for warranted stops signs elsewhere along the path.

Yield signs should be implemented as a package consisting of the appropriate combination of the following control measures:

[4] MUTCD, 2003 Section 9B.03 "YIELD signs shall be installed on shared-use paths at points where bicyclists have an adequate view of conflicting traffic as they approach the sign, and where bicyclists are required to yield the right of way to that conflicting traffic."

- Advance warning signs on the path
- A vehicle actuated flashing yellow warning beacon[5], accompanied by a warning sign, where appropriate
- "Vehicle Crossing Ahead" signs on the path and "Trail Crossing" signs along driveways and at residential street approaches to trail crossings
- Colored concrete intersection panel at path intersections and/or approaches with driveways and residential streets

The Transpo Group Report (page 12) is based on the concept that the highest volume street should have priority and that sight lines should be increased to maintain safety. The Transpo Group's design recommendations are extrapolated from "road" standards that assume that vehicles meeting on crossing roads have the same mass. The highest volume "street" in the Transpo report is a shared use path made up of pedestrians, joggers, dog walkers, bicyclist, skaters, and wheelchair users. As stated above, in a collision between a path user and a motor vehicle, the path user is more likely to experience serious injury or death than the driver of the vehicle regardless of who has the right of way. Path users should be warned of potential motor vehicle crossing danger at locations where potential collisions may occur. An alternative approach to the Transpo Group recommendation is suggested in the Manual of Uniform Traffic Control Devices (MUTCD) section 5B.02 STOP and YIELD Signs (R1-1 and R1-2)

Guidance:

STOP (R1-1) and YIELD (R1-2) signs should be considered for use on low-volume roads where engineering judgment or study, consistent with the provisions of Section 2B.04 to 2B.10, indicates that either of the following conditions applies:

A. *An intersection of a less-important road with a main road where application of the normal right-of-way rule might not be readily apparent.*

B. *An intersection that has restricted sight distance for the prevailing vehicle speeds.*

Both of the above conditions A and B currently exist at driveway and residential street crossing situations in Lake Forest Park. For the reasons stated above, Huitt-Zollars recommends the use of a yield sign at these intersections.

MUTCD section 9B.03 STOP and YIELD Signs (R1-1 and R1-2) also states the following:

Standard:

STOP (R1-1) signs shall be installed on shared-use paths at points where bicyclists are required to stop.

YIELD (R1-2) signs shall be installed on share-use paths at points where bicyclists have an adequate view of conflicting traffic as they approach the sign, and where bicyclists are required to yield the right-of-way to that conflicting traffic.

[5] MUTCD, 2003 Section 4K.03, states that warning beacons shall consists of flashing CIRCULAR YELLOW signal indications in each signal section.

Yield sign should be combined with improvements in sight-distance where this can be feasibly obtained without excessive re-grading of existing roads and modification of existing topography.

ii. Provide advance warning sign together with an actuated flashing yellow beacon for path users.

MUTCD section 4K.03 Warning Beacon

Support:

Typical application of Warning Beacons include:

D. On approaches to intersections where additional warning is required, or where special conditions exist.

iii. Provide "Trail Crossing Ahead" signs and "Caution Trail Crossing" signs on the approach to and at trail crossings along driveways and residential streets (For example, see WSDOT Design Manual Bicycle Facilities, Figure 1020-6).

iv. Provide signals actuated by crossing vehicular traffic at driveway crossings, if warranted (need for these signals would follow MUTCD standards for signal warrants).

v. Provide signals adjacent to Bothell Way actuated by both path users and vehicular traffic (existing condition).

vi. Provide all way stop at NE 165th Street (existing condition).

1.2. Path at intersections with NE 165th Street should be re-aligned to be adjacent to Beach Drive NE to increase visibility between all users at intersection approaches.

i. Re-align path to enter directly into all way stop sign intersection.

1.3. Identify crossings for bicyclists through use of:

i. Provide "Trail Crossing Ahead" signs and "Caution Trail Crossing" signs on the approach to and at trail crossings along driveways and residential streets (For example, see WSDOT Design Manual Bicycle Facilities, Figure 1020-6).

ii. Contrasting path warning surface approaches (20 to 30 feet prior to crossing)

iii. Traffic control measures (signing, striping, pavement marking, lighting)

1.4. To the extent possible, provide sight lines to commensurate with posted path speed limit.

2. GOAL: Provide a screened interface with property adjacent to path.

The Lake Forest Park section of the Burke Gilman Shared Use Path is bordered by single-family residential homes on both sides of the path. Implementing the following recommendations may minimize impacts of improvement to the Path on adjacent property owners:

2.1 Minimize width of disturbed area through use of cut/fill walls and underground drainage.

2.2 Protect adjacent properties from drainage and landslide impacts.

2.3 Buffer adjacent property with landscaping and solid fences.

i. Buffers should be provided to minimize or eliminate noise, light, and privacy impacts to adjacent property.

ii. In areas where trails and adjacent uses are at the same elevation, wide, dense vegetative buffers or solid fences should be established and maintained.

iii. Fences should be of adequate height to provide privacy to adjacent properties (in conjunction with landscaping) and maintain character of the linear park.

iv. The following minimum setback and buffer requirements are suggested based on City zoning code; 15' setback to developed trail facilities such as the shoulder, (see rear yard setback in the RS 7.2 zone) and a 6' minimum width perimeter landscape, (see requirement[6] in the Screening and Landscaping Section of Lake Forest Park Code 18.62.030.)

2.4 Minimize the removal/adjustment of existing fences and landscaping as much as possible to

i. Control noise

ii. Maintain character of the neighborhood

iii. Provide privacy to adjacent property

2.5 Shield lighting from adjacent property

3. GOAL: Provide a safe interface between different types of path users.

The Lake Forest Park section of the Burke Gilman Shared Use Path serves recreational and commuter uses including pedestrians, joggers, dog walkers, bicyclists, skaters, and wheelchair users.

A safe interface between different types of path users may be achieved by implementing the following recommendations:

3.1 Include and accommodate a forecast of different types of users throughout the length of the park at peak periods of use.

i. Huitt-Zollars recommends the use of methodology similar to that described in "Making Trails" in Public Roads, USDOT/FHWA, July/August 2005 Vol. 69 No. 1 (article attached).

3.2 Provide a safe and comfortable facility for pedestrians, baby strollers, joggers, dog walkers as well as bicycles and rollerbladers for recreation and transportation purposes.

i. Consider a lower design speed for some or all sections of the path through Lake Forest Park. While AASHTO standards generally recommend a design speed of 20 MPH, a lower design speed could be considered for several reasons:

[6] Six foot perimeter landscaping is suggested because the characteristics of path use may be consistent with the impacts of Town Center, corridor commercial, neighborhood business and residential multifamily uses that this screening and landscaping requirement applies to.

a. As indicated in Section 1 - item 2, Shared use paths are generally defined as facilities with minimal cross flow by motor vehicles. The south section of the shared use path through Lake Forest Park has eight (8) residential street crossings per a one-mile segment.

b. Existing topographical conditions for significant lengths of the path through Lake Forest Park are not conducive to creating sight lines required for a 20 MPH design speed at reasonable cost.

c. The ratio of use by non-bicyclists including children, joggers, and walkers to bicyclists is higher on this section of path than other portions of the path.

d. See Section 1 – item 1 for discussion on the AASHTO *Guide* – currently under consideration for revision by AASHTO.

In Huitt-Zollars opinion, the City of Lake Forest Park could consider a lower design speed for the reasons indicated above. Language pertaining to design speed in the AASHTO guidelines (page 36) indicates that minimum design speed should "generally" be 20 MPH. It is Huitt-Zollars opinion that this language indicates some flexibility in the guidelines to adjust to local conditions.

The *Guide for the Development of Bicycle Facilities* also states "improvements to existing facilities, is an ongoing process that should be consistent with a comprehensive plan considering the different bicycle users, existing conditions and community goals."

Lower design speed will have several benefits

- Reduce intersection reconfiguration costs
- Preserve existing buffers between path and residential uses by reducing clearing for sight-line requirements (see Section 1 – item 4 for examples of the affect of reduced design speeds on stopping sight distances)
- Allow a more park like and aesthetically pleasing setting for the path by increasing opportunities to provide enhanced screening and buffering outside required sight lines

ii. Consider a posted speed limit to provide a reasonable speed that will be respected by bicyclists but will acknowledge the numerous trail crossings and presence of numerous other types of users who are likely moving at a much slower speed. A reduced speed for a short period will not significantly increase commuter travel time.[7]

iii. Provide a trail surface of adequate width to safely and comfortably accommodate and encourage forecasted users. Trails wider than 12' may have additional buffer requirements to mitigate impacts to adjacent property.

iv. Provide non-obstructive speed control measures to aid in moderating higher speed users in order to make the trail experience enjoyable for lower speed users. Current guidelines appear to discourage obstructions in the path and review of AASHTO *Guide* update materials does not reflect any proposed changes to this guideline.

[7] Page 14 of the Transpo report indicates, " due to the mix of users on the trail, including bicycles, pedestrians, and skaters, the overall travel speeds are less than those for just bicycles. It would be appropriate to post speeds at a rate lower than just the bicycle speeds. 10 to 15 mph would be appropriate *posted* speed limit for this section of the trail. The posted speed limit of 10 MPH is within this range."

4. GOAL: Provide notification of different trail conditions and use regulations in Lake Forest Park.

The Lake Forest Park section of the Burke Gilman Shared Use Path shall exhibit visual and physical features to highlight the unique City environment.

Provide necessary signage to convey conditions and regulations specific to the path while taking caution to minimize the number of signs to preserve their credibility.

Notification of different trail conditions in Lake Forest Park may be made by implementing the following recommendations:

4.1 Provide strong visual indication of entrance to Lake Forest Park trail segment.

i. Entry arch over trail welcoming trail users to Lake Forest Park

ii. Suggested locations for welcome arch at NE 145th Street and/or at Ballinger Way NE (limits of congestion section)

iii. Provide entry plaza/pocket park at NE 145th Street, and at Ballinger Way NE if possible; special conditions and use regulations will be posted at these areas

4.2 Notification at north and south entry points of special use conditions through two-mile "center of town" of Lake Forest Park due to the high congestion:

i. Provide "park use" signs at key entry points, to include but not limited to:

- Congested Area For Two Miles
- Walkers Stay To Edge Of Pavement
- Dogs Must Be Leashed
- Yield To Crossing Traffic
- Bicyclists Ride With Caution

ii. Provide traffic control signs for bicyclists at key entry points, to include but not limited to:

- Use Voice Or Bell When Passing
- Ride Single File In Presence of Pedestrians
- Bicyclist Riding More Than Two Abreast Prohibited
- Please Exercise Courtesy
- Congested Area/Hidden Driveways For Two Miles

4.3 Provide signing at NE 145th Street, and at Ballinger Way NE (inbound) indicating:

i. Posted speed limit due to congested conditions.

ii. Alternative on-street route for high-speed bicyclists (southbound)

4.4 Provide signing at the same locations (outbound) thanking cyclists for their courtesy

4.5 Provide location for radar speed signs

4.6 Provide proper sign size and mounting height for pedestrians/bicyclists

4.7 The facility should be designed as a linear park, including seating, and picnic facilities.

i. Lighting should be pathway scale rather than street traffic scale where possible

5. GOAL: Establish responsibility for maintenance and enforcement.

Specific maintenance and enforcement agreements must be prepared, reviewed and formally adopted before the City issues a Conditional Use Permit.

5.1 King County must do or contract to do the following:

i. Adopt a specific code of rules and regulations for the Lake Forest Park section of trail and establish an enforcement program in conjunction with the City

ii. Maintain landscaping in the trail right-of-way as required by Lake Forest Park Conditional Use Permit.

iii. Maintain trail surface and drainage systems as required and specify annual funding sources to ensure adequate levels of both routine and emergency maintenance.

iv. Provide a signing and lighting operation and maintenance plans specifying means for inspection and replacement of facilities.

v. Provide a maintenance bond for adequate compliance with maintenance, enforcement and other agreements as conditioned by City permitting.

Appendix A

Documents Reviewed

King County documents reviewed include:

- Forward Thrust Bond Language
- Original Environmental Impact Statement for Burke-Gilman Trail
- King County – Regional Trail Inventory and Implementation Guidelines, July 2004
- Transpo Group – Burke-Gilman Trail Crossing Plan, March 9, 2005
- Transpo Group – Revised Burke-Gilman Trail Crossing Plan, May 11, 2005
- Transpo Group – Burke-Gilman Trail Crossing Plan, May 16, 2005
- Transpo Group – In-Pavement Lighting Memo, July 19, 2005
- Consultant Design Recommendations, June 21, 2005
- King County – Design Recommendation for Intersections 1 through 9, June 2005
- Atelier PS – Burke-Gilman Trail Redevelopment Study (Draft), October 2005

Standards/guidelines referenced include:

- *Guide for the Development of Bicycle Facilities,* 1999, AASHTO
- *A Policy on Geometric Design of Highways and Streets* (Green Book), 1994, AASHTO
- *Manual on Uniform Traffic Control Devices* (MUTCD), Federal Highway Administration (FHWA), National Advisory Committee on Uniform Traffic Control Devices including the *Washington State Modifications to the MUTCD,* M 24-01, WSDOT
- *Standard Plans for Road, Bridge, and Municipal Construction* (Standard Plans), M 21-01, WSDOT
- *Design Manual*, Chapter 1020, 2001, WSDOT
- *Idaho Bicycle and Pedestrian Transportation Plan*, January 1995, Idaho Transportation Department.

- *Updating the AASHTO Guide for the Development of Bicycle Facilities,* March 2005, NCHRP.
- *Code of Federal Regulations*, Title 23 – Highways

Appendix B

Time to Travel 2 Miles

at Speeds Ranging from 10 - 20 MPH

SPEED (mph)	TIME (minutes)	TIME DIFERRENCE (compared to 10 mph)
10	**12.0**	**0**
11	10.9	1.1
12	10.0	2.0
13	9.2	2.8
14	8.6	3.4
15	**8.0**	**4.0**
16	7.5	4.5
17	7.1	4.9
18	6.7	5.3
19	6.3	5.7
20	**6.0**	**6.0**

This table is attached for information only and is included in this document as a consensus of City Council committee comments.